

Dengue Fever

Some Basic Facts

SR. INNOCENTIA

DENGUE FEVER is caused by a small virus, approximately 12 to 25 millimicrons, and is transmitted from man to man by an *Aedes Aegypti* mosquito. It is also known as breakbone fever. The virus can be recovered from the serum of patients by centrifugation. Human blood remains infectious for several weeks. The virus is destroyed by ultraviolet light and by Formalin.

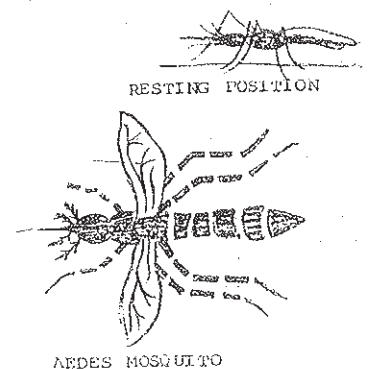
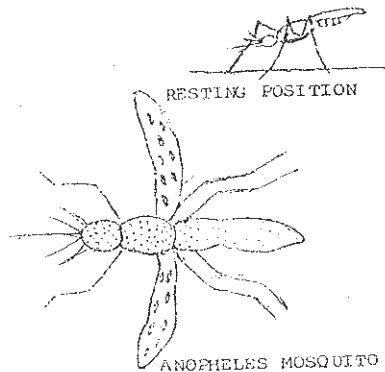
Vectors of Dengue

Bancroft (1906) was the first person who reported that this disease is transmitted by the bite of mosquito, *Aedes Aegypti*. The mosquito is found mainly in tropical and sub-tropical regions. The mosquito becomes infected if it bites a patient as long as 18 hours before to 3 days after the onset. It does not become infectious until after an incubation period of 8 to 14 days. It remains infectious for the rest of its life (1 to 3 months) but does not transmit the disease to the next generation. All ages and both sexes are susceptible to it. The virus multiplies in the body of the mosquito during the extrinsic incubation period and permeates the tissues, including the salivary glands. When it next bites an individual to obtain a blood meal, the virus is introduced with its saliva.

It is a domestic mosquito and breeds close to human habitation. The mosquito is a day biter. Isolation of the patient is not required as it is transmitted only by the mosquito. Outbreaks of Epidemic of Dengue have become frequent in recent years

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Differentiation between *Anopheles* Mosquito and *Aedes* Mosquito



in India. During 1986, a total of 21,799 cases and 6 deaths were reported to the Central Ministry of Health and Family Welfare in India.

Dengue Fever is of two types : 1. Classical Dengue Fever 2. Dengue Haemorrhagic Fever.

1. Dengue Fever

Clinical Manifestation

- Abrupt with high fever,
- Severe headache.
- Pain in the eyeballs.
- Chilliness may also occur.
- On the 3rd to 5th day a rash appears, first on the chest trunk and abdomen and then spreading to extremities and the face. It is maculopapular or scarlatiniform in appearance and lasts for few days. It may be itchy.
- In few petechial rash may also occur towards the end of the febrile period or early in convalescence. It is usually limited to the back of the feet, legs, wrists, hands and fingers and may occur on the mucous surfaces of the cheeks and palate.

— The fever lasts about 5 to 6 days and falls by crisis. Sometimes it falls to normal during the middle of the febrile period; this causes the so-called "saddle back" type of fever curve.

— During the febrile period the patient has no appetite and may have abdominal discomfort. The patient has a general malaise and may have sore throat or cough. Sweats are not uncommon.

— Lymph nodes are usually enlarged.

— The pulse rises with the fever, but towards the end of the acute period the pulse may be slow in comparison with the fever. A slow pulse may continue during the convalescence period.

Laboratory Diagnosis

I. Leukopenia with a relative lymphocytosis; blood picture returns to normal within one week after fall of temperature.

II. Serologically - rising titer of neutralizing antibodies can be demonstrated in the serum of a patient if

an early and a later specimen of blood are obtained.

Incubation Period

About 2 to 15 days.

Immunity

An attack of Dengue to give long lasting immunity is not known. But tests have indicated that it is at least as long as 18 months.

Vaccine

It is prepared from infected mouse brain for active immunization. However, it has not yet been tried out sufficiently. So far no appropriate vaccine is available.

Medical Treatment

There is no specific treatment for Dengue Fever. Various antipyretics and sedatives are used to control the fever and pains. Other symptoms are treated as they arise.

Diet

No special diet is required. Diet is the same as in other acute febrile illnesses. Liquids are given during the stage of fever and solids are given as the patient is able to take them.

Supportive Nursing Care

The patient remains in bed during the acute stage and is made comfortable with frequent sponges to relieve the fever and an ice cap for the headache. If there is itching, Calamine lotion may be applied to the rash. If insomnia is present as per physician's order sedatives may be given. The Nurse should plan activities which will arouse the interest of patients to relieve their anxieties.

2. Dengue Haemorrhagic Fever

It is caused by infection with more than one Dengue virus (double infection). Outbreak of Dengue Haemorrhagic Fever for the first time in India was in Calcutta in 1963 and was investigated by ICMR. In 1989, about 200 people died in the capital in a Dengue Haemorrhagic Fever epi-

demic. This disease broke out in a big way in 1983 and 1992 also.

Clinical manifestations

— Sudden onset of fever with chill and/or rigour.

— Intense headache, severe bodyaches and epigastric discomfort.

— Nausea and vomiting are distressing features in severe cases.

— Drowsiness, insomnia may be present and there is extreme degree of prostration.

— Frank haematemesis is the most important feature in fatal and severe cases like - Epistaxis; Vaginal bleeding; Gum bleeding; Gastrointestinal haemorrhage, or, Malaena.

The patient can develop peripheral circulatory failure and go into prolonged hypotensive shock with oliguria and a rise in the nonprotein Nitrogen content of blood.

— On fourth to sixth day of the illness, there is defervescence, the temperature again goes up after 24 to 28 hours. The patient becomes a febrile from 8th to 10th day of the illness followed by a prolonged period of convalescence.

Clinical Diagnosis

— Haemorrhagic manifestation, including atleast a positive tourniquet; using a blood pressure cuff is recommended. In Dengue Haemorrhagic Syndrome the test usually gives a definite positive result, i.e., more than 20 petechiae per 2.5 cm (1 inch) square. The test usually becomes positive, if the test is done after recovery from shock.

— Enlargement of liver

Laboratory Diagnosis

— (a) Thrombocytopenia (100,000/mm³ or less); (b) Haemoconcentration; haemotocrit increased by 20% or more of recovery value.

Treatment

— Intravenous therapy to treat hypovolaemic shock.

— Blood transfusion, if needed.

— Symptomatic therapy as per the need of the patient.

Control and Preventive Measures

— To control the breeding of mosquitoes, indoor and outdoor sprays with insecticides can be useful. Since *Aedes Aegypti* breeds in clean and stagnated water, individual householders can play an important role by preventing the breeding of mosquito in and around the premises, by avoiding accumulation of water in containers such as flower pots, barrels, drums, tanks, coolers, potholes, etc. by emptying them atleast once a week. People should wear such type of clothes to cover exposed arms and legs and make use of mosquito nets as well as insect repellants. During epidemic anti-adult measure alone can bring about a rapid interruption of transmission. A new technique consisting of aerosol spray of ultra low volume quantities of Malathion or Sumithion (250ml (hectare) has been found effective. The tiny droplets kill the mosquito in air as well as on water.

References

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